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(56) Documents Cited

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(58) Field of Search

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(54) Abstract Title

Downlighter with integral fire-resistant hood

(57) A downlighter comprises a casing 1 for housing electrical connections for connecting the downlighter to a source of mains electricity and a downwardly extending electrical contact collar 2 for receiving a bulb, fluorescent tube or other light fitting. A reflector 4 extends downwardly from the casing to a position below the light fitting, and a fabric hood 9 coated or impregnated with a liquid based intumescent material extends downwardly from the underside of the casing around the external wall of the reflector. The hood is connected at its lower end to an annular base of the downlighter and includes a top 11 to which is secured an intumescent gasket 12 formed with an aperture 14 through which the downlighter collar 2 extends with a clearance between the boundary of the aperture and the collar exterior.

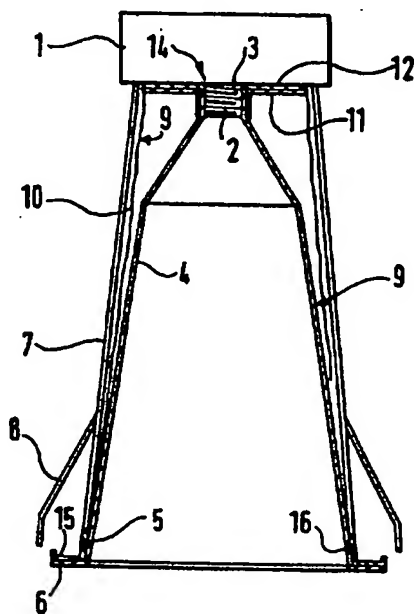


Fig.1.

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy. The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995. This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995.

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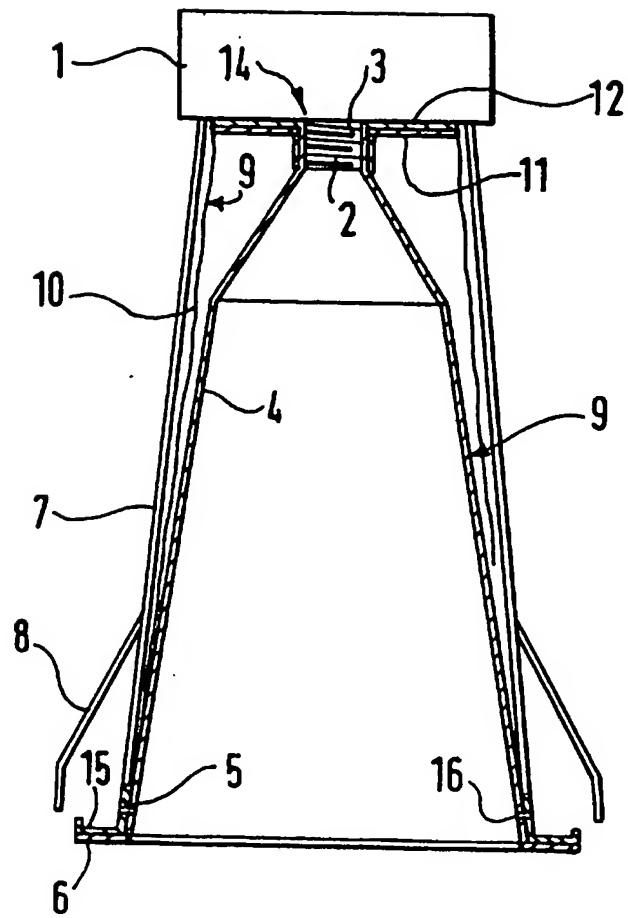


Fig.1.

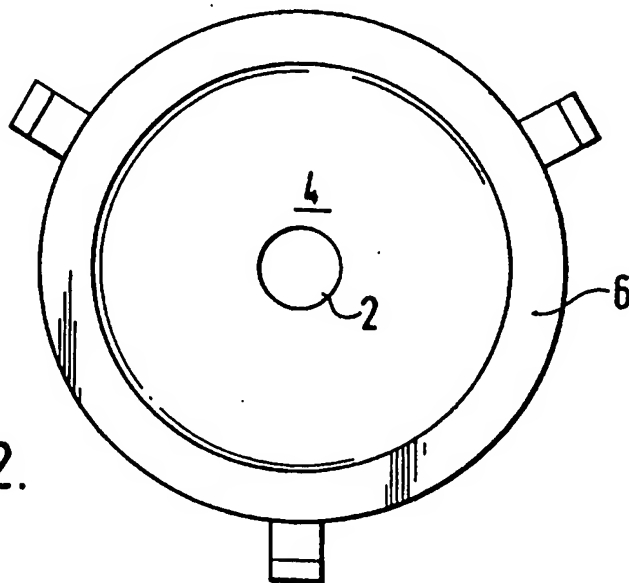


Fig.2.

ELECTRIC LIGHT FITTINGS

This invention relates to electric light fittings suitable for mounting within a ceiling space of a building. More especially the invention concerns a mains connected light fitting having an integral hood which in the event of fire isolates the light fitting from the ceiling space in which it is mounted and reacts to prevent or minimise the passage of flames and/or smoke to other areas of the building.

Light fittings recessed into ceiling spaces are well known. Such light fittings are known as downlighters and are referred to as such hereinafter. The heat generated by downlighters can be considerable and represents a fire hazard. Also the ceiling space in which a downlighter is mounted can itself provide a path for fire and smoke to other rooms or areas of a building.

Fire resistant covers for downlighters have previously been proposed. Such a cover is separate from a downlighter to be protected and consequently needs to be carefully positioned over and spaced from the exterior of the downlighter. These covers also rely upon fixings into a surface of a ceiling structure for securement purposes. In practice correct alignment of a cover with respect to a downlighter can be difficult particularly where access to the ceiling space is limited. Furthermore fixing a cover to a ceiling can be difficult and can detract aesthetically from the decor of the ceiling.

The present invention sets out to provide a downlighter which includes an integral protective hood and which eliminates or at least alleviates many of the disadvantages discussed above.

According to the present invention in one aspect there is provided a downlighter which comprises a casing for housing electrical connections for connecting the downlighter to a source of mains electricity and a downwardly extending electrical contact collar for receiving a bulb, fluorescent tube or other light fitting, a reflector extending downwardly from the casing to a position below the light fitting, and a fabric hood coated or impregnated with a liquid based intumescent material which extends downwardly from the underside of the casing around the external wall of the reflector and is connected at its lower end to an annular base of the downlighter, the hood including a top to which is secured an intumescent gasket formed with an aperture through which the downlighter collar extends with a clearance between the boundary of the aperture and the collar exterior.

The fabric is preferably a fibrous cloth (e.g. a glass fibre cloth) which is coated on one or both of its surfaces with a liquid based intumescent material. The intumescent gasket may comprise a suitably shaped piece of card which overlies a similarly shaped piece of intumescent cloth.

The reflector may be connected at its upper end to the collar; thus the collar may be externally threaded and receive complementary internal threading of a sleeve located within a neck of the reflector.

The downlighter casing may be connected to its annular base by a plurality of elongate relatively rigid straps, the fabric hood being trapped between these straps and the reflector exterior. The annular base may be formed with a radially outwardly extending lip on which an outwardly extending end piece of the hood lies. This hood end piece may be secured

to the lip.

In another aspect the invention provides a downlighter having an integral hood which is produced from a fibrous cloth material coated or impregnated with a liquid based intumescent material, the hood including in its upper surface an intumescent gasket formed with an aperture through which a contact collar for a light fitting of the downlighter protrudes.

The invention will now be described by way of example only with reference to the accompanying diagrammatic drawings in which:-

Figure 1 is a side view partly in section of a downlighter in accordance with the invention; and

Figure 2 is a plan view from below of the downlighter shown in Figure 1.

The downlighter illustrated in the drawings has an upper casing 1 which houses electrical connectors, receptors for connecting the downlighter through wiring to a source of mains electricity. The casing may also house items such as starters and/or capacitors for fluorescent tubes. Protruding downwardly from the casing 1 is a light fitting electrical contact collar 2 which is open at its lower end to receive a conventional light bulb or fluorescent tube (not shown). The outer face of the collar is threaded for connection to an internally threaded sleeve 3 positioned within the upper open end of a frusto-conical hollow reflector 4. The height of the reflector is such that it entirely encompasses the light fitting of the downlighter.

The base of the downlighter is defined by an annular collar 5 formed with an outwardly extending radial lip 6 and secured to the casing 1 through a plurality of elongate relatively rigid straps 7. Each strap 7 includes a flexible clip 8 to assist location of the downlighter within a ceiling space.

Positioned about the external circumference of the reflector 4 is a hood 9. The hood 9 is produced from a fibrous woven cloth (e.g. a glass fibre woven cloth) which has been coated on one or both of its sides with an intumescent paint or other intumescent material. Preferably the cloth is impregnated with intumescent. As shown the hood 9 is frusto-conical and comprises an upstanding side wall 10 and a top 11. Typically the side wall 10 is produced from a length of glass fibre cloth which is sewn together at the cloth ends, the top 11 then being secured to the upper margin of the side wall again by sewing. The hood top 11 has secured to it a circular piece of card which overlies and is bonded to a similarly shaped piece of intumescent material to define an intumescent gasket 12. This material typically comprises fibrous material impregnated with an intumescent such as carbon granules. The gasket 12 comprising the card and intumescent may be adhered to the hood or secured to the hood by studs or rivets. The gasket is formed with a central opening 14 through which passes the light fitting collar 2. The size of the opening 14 is such that the border of the opening 14 is at least partially spaced from the exterior of the collar to facilitate ventilation of the downlighter interior.

The hood 9 is formed at its lowermost end with an outwardly extending fabric piece 15 which locates on the upper surface of the downlighter lip 6. The fabric piece 15 may be secured to the lip 6.

As shown the hood 9 is trapped between the straps 7 and the external surface of the reflector 4. Studs or rivets 16 pass through the adjoining surfaces of the straps, the hood and the reflector.

The annular base 5 of the downlighter may receive a translucent cover which effectively seals the lower end of the reflector.

In use, heat generated by a downlighter can represent a fire hazard. In the event of such a fire, the intumescent coating of the hood 9 and the

intumescent gasket 12 quickly expands to isolate the downlighter entirely from the surrounding structure thereby confining the fire and any resulting smoke and maintaining the fire resistance of the structure. Covers in accordance with the invention have been subjected to fire testing with no failure of the integrity criterion at the end of four hours testing.

It will be appreciated that the forgoing is merely exemplary of downlighters in accordance with the invention and that modifications can readily be made thereto without departing from the true scope of the invention.

CLAIMS

1. A downlighter which comprises a casing for housing electrical connections for connecting the downlighter to a source of mains electricity and a downwardly extending electrical contact collar for receiving a bulb, fluorescent tube or other light fitting, a reflector extending downwardly from the casing to a position below the light fitting, and a fabric hood coated or impregnated with a liquid based intumescent material which extends downwardly from the underside of the casing around the external wall of the reflector and is connected at its lower end to an annular base of the downlighter, the hood including a top to which is secured an intumescent gasket formed with an aperture through which the downlighter collar extends with a clearance between the boundary of the aperture and the collar exterior.
2. A downlighter as claimed in Claim 1 wherein the fabric is a fibrous cloth which is coated on one or both of its surfaces with a liquid based intumescent material.
3. A downlighter as claimed in Claim 2 wherein the fibrous cloth is a glass fibre cloth.
4. A downlighter as claimed in any one of Claims 1 to 3 wherein the intumescent gasket may comprise a suitably shaped piece of card which overlies a similarly shaped piece of intumescent cloth.
5. A downlighter as claimed in any one of the preceding Claims wherein the reflector is connected at its upper end to the collar.
6. A downlighter as claimed in Claim 5 wherein the collar is externally threaded and receives complementary internal threading of a sleeve

located within a neck of the reflector.

7. A downlighter as claimed in any one of the preceding claims wherein its casing is connected to its annular base by a plurality of elongate relatively rigid straps, the fabric hood being trapped between these straps and the reflector exterior.
8. A downlighter as claimed in Claim 7 wherein the annular base is formed with a radially outwardly extending lip on which an outwardly extending end piece of the hood lies.
9. A downlighter as claimed in Claim 8 where the hood end piece is secured to the lip.
10. A downlighter having an integral hood which is produced from a fibrous cloth material coated or impregnated with a liquid based intumescent material, the hood including in its upper surface an intumescent gasket formed with an aperture through which a contact collar for a light fitting of the downlighter protrudes.
11. A downlighter substantially as herein described and as described with reference to Figures 1 and 2 of the accompanying drawings.



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Claims searched: 1 to 11

Examiner: Graham S. Lynch
Date of search: 8 January 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): F4R (RPB, RL, RPM); A5A (A31); E1D (DF105)

Int Cl (Ed.6): F21S 1/02, 3/02; F21V 21/04, 25/12; A62C 3/14, 3/16

Other: On-line : WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y	GB 2297609 A ENVIRONMENTAL SEALS. Whole document.	1, 10 at least
Y	US 4754377 WENMAN. Figures 1 to 6. Column 3, line 14 to column 4, line 28.	1, 10 at least

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.